# The Nexus of ESG Score and Stock Return: Evidence from The LQ45 Index

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**Abstract:** The objective of this study is to examine the relationship between Environmental, Social, and Governance (ESG) aspects and the return on stock performance in Indonesia. An exhaustive examination of the data from the Indonesian stock market LQ45 Index is undertaken to determine the firms that give priority to environmental, social, and governance (ESG) policies. The study utilizes a quantitative methodology, employing cross-sectional dependency test with the sample of 45 blue chip firms. Breusch-Godfrey Serial Correlation LM Test and Heteroscedasticity Test were used in the research. This study enhances the current body of literature by offering empirical proof about the influence of ESG score on stock returns, particularly within the framework of the LQ45 index. The results will underscore the importance of ESG considerations for investors and stress the possible financial advantages of integrating ESG elements into investing strategies. This study contributes to the expanding pool of information on sustainable investment and its ramifications for financial markets.

**Keywords:** ESG, Indonesian Stock Market, stock return, sustainable investment.

## INTRODUCTION

A company's effectiveness in its interactions with society can be seen through the policies, programs, and tangible outcomes of its Environmental, Social, and Governance (ESG) processes (Xie et al., 2019; Alsayegh et al., 2020; Huang, 2021). In the aftermath of the 2008 global financial crisis, the ESG score has become a vital aspect of Corporate Social Responsibility (CSR), impacting the financial performance of multinational corporations and their investments by shaping strategies and practices (Velte, 2019; Wood, 1991). According to Sládková et al. (2022), Sustainable and Responsible Investment (SRI) combines basic analysis with the evaluation of environmental, social, and governance (ESG) concerns while researching, analyzing, and choosing securities for an investment portfolio. The objective of this method is to optimize long-term profits for investors and exert a constructive influence on society by shaping company conduct (Martin, 2013; Schoenmaker & Schramade, 2019). The growing demand for sustainable products can be perceived as either a business opportunity or a necessity by numerous companies, resulting in the incursion of additional costs and the management of new types of risks, particularly those associated with the environment (Duong et al., 2023). The 2014 Volkswagen

emission scandal, which resulted in an 18% decline in the company's stock price, serves as a prime illustration of the potential impact of environmental standards on a company's financial performance by way of reputational and compliance risks (La Torre et al., 2020).

Investors who conduct investment activities see the company's performance through financial statements (Alhadi et al., 2021; Ellili, 2022). The financial performance of the company is a measure of the increase in the price of the stock as well as making investors attracted to the company's stocks (Bahri, 2018; Vuong, 2022). The stock price can indicate the level of performance of a company where one of the factors is used to measure the success of the management of the entity (Kosasi & Aspriyadi, 2020; Castro et al., 2021). Thus, the issuer needs to pay attention to its financial performance to increase investor confidence. On the other hand, ESG-based indices are experiencing a positive upward trend. Indonesian companies are progressively committing to net-zero targets as a means to achieve lasting results.

Using fluctuating stock prices can be done through technical and fundamental methods (Nti et al., 2020). Whether or not the performance of an issuer can be seen from the stock price stability of the issuer. The magnitude of the investor's offer or demand for shares in the capital markets causes the price of the stock to change from time to time. The high demand caused the price of the stock to rise, which means that quite a lot of people are interested in the stock (Fahlevi et al., 2018). In an investment environment, a capitalist must be able to understand the financial conditions of a company, and the return that the investor will receive depends on whether or not the level of financial performance of the company (Saepudin & Indah, 2002). Green investing can enhance a firm's environmental performance, with the positive correlation intensified when the company participates in social investment forums (Diantini et al., 2023).

Several factors influenced the decision to select the LQ45 index as a representative for examining ESG implementation. These organizations not only focus on institutionalizing their ESG practices and prioritizing socially responsible initiatives, but they also place a strong emphasis on sustainability. For the past two decades, the LQ45 index has been a reliable indicator of Indonesia's rapid economic growth. These companies are increasingly open to expanding into international markets due to globalization and technological advancement. The LQ45 stock index is a stock index that includes 45 specific companies that are traded on the Indonesia Stock Exchange. Companies are included in this index based on their potential for future growth, along with specific criteria such as market capitalization, liquidity, and strong fundamental conditions. To simplyfy, the LQ45 index reflects the stock performance of major and highly tradable companies in the Indonesian capital market. The Indonesia Stock Exchange regularly reviews and updates the LQ45 index every six months in February and August for its application. To maintain the dynamism of the index's stock list over time. The LQ45 index at the end of 2023 is used as the sample of corporations in this study.

The number of ESG-based stock indices that are listed is increasing in comparison to the LQ45 index's year-to-date decline of 0.86. (year to date). This assertion is predicated on the fact that $650 billion of funds were invested globally in ESG-focused investments by November 30, 2021. This represents an increase from $542 billion in 2020 and $285 billion in 2019. 56.87% of the market capitalization of the Indonesian Stock Exchange (IDX) is controlled by 70 stock issuers that implement ESG, which is equivalent to Rs. 5,407 trillion. The ESG company stock index has experienced a robust and consistent increase, surpassing the combined stock price index (IHSG), which includes the LQ45 and the 100 Compass. Although there are opportunities for positive trends and government support in current ESG investments, there are some fundamental challenges. ESG-based investments continue to be underrepresented due to a dearth of awareness and the constraints imposed by ESG companies. Companies with elevated ESG scores indicate greater risk management capabilities.

These companies possess a low cost of capital, which correlates with a high valuation (Alghifari et al., 2023). The objective of this study is to enhance the current body of research by examining the specific context of the LQ45 index and thereby facilitating a more comprehensive comprehension of the correlation between ESG and stock returns. The following research issues are addressed:

RQ1. What is the relationship between ESG Ratings and LQ45 Stock Return?

This research has become essential for the company's comprehensive understanding of the impact of its ESG policy on the price of its shares. According to (La Torre et al., 2020), the Eurozone stock index Eurostoxx50 experienced returns that were influenced by ESG components between 2010 and 2018. However, the aggregate ESG index made a minimal contribution to the modeling of returns. This implies that the promotion of ESG strategies and the investment in ESG have only had a positive influence on returns for a small number of companies, primarily in sectors such as energy and utilities. In the same vein, (Kevser et al., 2023) conducted a study on the influence of ESG on stock markets in G7 countries and discovered that the stock market (DAX) was only influenced by ESG scores in Germany. As a result, German organizations have initiated the integration of corporate social responsibility and ESG practices into their management and reporting strategies. These results are of great importance to investors who are contemplating investments in G7 countries, irrespective of their emphasis on ESG rankings.

Numerous studies have been conducted to examine the relationship between ESG scores and firm performance as well as market returns, instead the findings vary widely (Yoo & Managi, 2022). While some research indicates that ESG ratings positively impact stock market performance (Chen & Xie, 2022). However, another research has also found a negative impact on ESG scores (Yoon et al., 2018). Other research found no significant relationship between stock market performance and ESG rankings (Landi & Sciarelli, 2019). The lack of standardized methods for calculating ESG scores and the use of different variables in their estimation are two factors that can be attributed to the findings that are inconsistent with one another (Clément et al., 2023).

## METHODS

This paper seeks to examine the impact of ESG scores on stock returns within the LQ45 index. It employs quantitative research, using ESG scores of LQ45 index companies based on annual financial data from www.investing.com and ESG scores from www.idx.co.id. The study involves a cross-sectional analysis with a sample of 45 firms for the year 2023. The purposive sampling method was used to select samples, focusing on companies that are part of the LQ45 index and published sustainability reports in 2023.

This study investigates two variables: the dependent variable, which is the stock return of companies that are included in the LQ45 index (y), and the independent variables, which are the ESG Score (x1), ROA (x2), ROE (x3), EPS (x4) and PER (x5). By specifically focusing on the context of the LQ45 index, the purpose of this research is to improve our understanding of the causal connection between ESG factors and stock returns. This paper intends to make a contribution to the existing body of literature on the subject. Through the process of addressing this gap, we will be able to acquire valuable insights into the specific ways in which the LQ45 index is affected by the various components of the ESG score. Consequently, this will be of assistance in the process of developing initiatives for management that are in accordance with sustainable practices. With the end goal of providing industry professionals, investors, and policymakers with valuable information, the study's ultimate objective is to shed light on the complex relationship that exists between environmental, social, and governance factors and the performance of the stock market within the LQ45 index.

The data analysis utilized a cross-sectional analysis method. An essential preliminary test for ensuring the reliability of the results between variables is the cross-sectional dependency test. The choice of cross-sectional dependency test depends on the data set's structure, although several tests are available to assess these dependencies (Kevser et al., 2023). A cross-sectional study is an observational research method that examines variable data collected at a specific moment in time from a sample population or a designated subset (Fleetwood, 2018). The preliminary model is designed as follows:

*Return$_i$ = α$_i$ + β1ESGscore + β2ROA + β3ROE + β4EPS + β5PER + ε$_i$*

Testing classical assumptions is essential for conducting cross-sectional data regression analysis. Prior to hypothesis testing in the study, it's crucial to perform classical assumption tests, which include the Normality Test, Multicollinearity Test, Heteroscedasticity Test, and Autocorrelation Test. The normality test assesses whether the variables in the cross-sectional regression model are normally distributed. The autocorrelation test examines the correlation between residuals of one observation and residuals of another (Winarno, 2015). The autocorrelation test, as described by (Ghozali, 2016), examines the correlation between residuals in period t and residuals in the previous period (t-1). The Breusch-Godfrey test is applicable for detecting autocorrelation.

The method known as the t-test figures out how each independent variable affects the dependent variable by looking at the regression coefficient. It assesses whether the regression coefficient is statistically significant on its own. The t-test is applied to regression results at a 95% confidence level, or α = 5%. This partial regression test aims to identify whether the independent variable significantly correlates with the dependent variable.

The F-test evaluates the overall significance of the regression model by assessing whether all independent variables collectively have a meaningful impact on the dependent variable. This simultaneous regression test aims to determine if the independent variables, taken together, significantly affect the dependent variable. The coefficient of determination, $R^2$ represents the proportion of variance explained by the independent variables.

The coefficient of determination $R^2$ test assesses how well the model explains the dependent variable. $R^2$ ranges from zero to one ($0 < R^2 < 1$). A low $R^2$ value indicates that the independent variables have limited explanatory power because $R^2$ can be biased by the number of independent variables included in the model. Each additional variable tends to increase $R^2$, regardless of its actual impact on the dependent variable. Therefore, this study uses adjusted $R^2$ A value of adjusted $R^2$ closer to one (1) signifies a stronger ability of the model to explain the dependent variable (Ghozali, 2016).

## RESULTS AND DISCUSSION

The purpose of this paper is to present a comprehensive empirical analysis that was carried out on datasets for the year 2023, focusing on Stock Return, ESG, ROA, and ROE. It is absolutely necessary for the data to adhere to a normal or nearly normal distribution in order to guarantee that a regression model will generate accurate results. In order to evaluate this distribution, the Kolmogorov-Smirnov normality test was utilized. The results of this test prove a probability value of 0.701533 (Table 1), thus providing evidence that the data follows a normal distribution.

The multicollinearity test is designed to determine whether there is a correlation among the independent variables in the regression model, as an ideal regression model should have independent variables that are not correlated with each other (Ghozali, 2016). When independent variables are correlated, it indicates that they are not orthogonal. According to the multicollinearity test results presented in Table 2, the Variance Inflation Factor (VIF) values for the ESG variable are 1.227933, which is less than 10, the VIF value for ROA is 9.952355,

the VIF value for ROE is 9.688007, EPS 1.141220 and PER 1.060294, which is similarly below 10. In light of this, it is possible to draw the conclusion that there are no indications of multicollinearity, and the model is successful in passing the multicollinearity test.

**Table 1 Descriptive Statistic for Variables**

| | |
|---|---|
| Mean | −1.91e-17 |
| Median | −0.005324 |
| SD | 0.271328 |
| Kurtosis | 2.710785 |
| Skewness | 0.271326 |
| Prob | 0.701533 |
| JB | 0.708975 |
| MIN | −0.424243 |
| MAX | 0.614809 |

Source: data processed (2024)

**Table 2 Multicollinearity Test**

| Variable | Coefficient Variance | Uncentered VIF | Centered VIF |
|---|---|---|---|
| Stock Return | 0.021115 | 14.08721 | NA |
| ESG Score | 2.36E-05 | 14.63999 | 1.227933 |
| ROA | 2.10E-05 | 10.01830 | 9.952355 |
| ROE | 7.23E-06 | 10.01105 | 9.688007 |
| EPS | 9.52E-10 | 1.336144 | 1.141220 |
| PER | 9.07E-08 | 1.131415 | 1.060294 |

Source: data processed (2024)

The heteroscedasticity test is carried out in order to ascertain whether or not the residuals from one observation to another within the regression model have a significantly different amount of variance from one another. When the variance of residuals is the same across all observations, this phenomenon is referred to as homoscedasticity. On the other hand, when the variance varies from one observation to the next, this phenomenon is referred to as heteroscedasticity. In the case of an optimal regression model, homoscedasticity is the defining characteristic, which indicates that heteroscedasticity is absent (Ghozali, 2016). The White Test, which involves regressing the absolute values of residuals, can be utilized in order to determine whether or not heteroscedasticity is present in the data. The results that are presented in Table 3 indicate that the probability values for all variables are greater than 0.05. This indicates that homoscedasticity is present or that there are no signs of heteroscedasticity, which confirms that the model is successful in passing the heteroscedasticity test.

**Table 3 Heteroskedasticity Test**

| Variable | Coefficient | Std. Eror | t-stat | prob. |
|---|---|---|---|---|
| C | 0.212923 | 0.149048 | 1.428557 | 0.1660 |
| ESG^2 | −3.69E-05 | 0.000160 | −0.230543 | 0.8196 |
| ESG*ROA | −0.000276 | 0.000864 | −0.319362 | 0.7522 |
| ESG*ROE | 0.000528 | 0.000669 | 0.788168 | 0.4383 |
| ESG *EPS | 1.36E-06 | 3.85E-06 | 0.352162 | 0.7278 |
| ESG *PER | −3.12E-06 | 1.54E-05 | −0.202623 | 0.8411 |
| ESG | −0.003974 | 0.009901 | −0.401347 | 0.6917 |
| ROA^2 | 0.001285 | 0.000899 | 1.428468 | 0.1660 |
| ROA*ROE | −0.001192 | 0.000805 | −1.480613 | 0.1517 |
| ROA*EPS | 5.88E-07 | 5.38E-06 | 0.109274 | 0.9139 |
| ROA*PER | 7.06E-06 | 0.000756 | 0.009336 | 0.9926 |
| ROA | 0.005312 | 0.025358 | 0.209497 | 0.8358 |
| ROE^2 | 0.000213 | 0.000146 | 1.457623 | 0.1579 |
| ROE*EPS | −4.95E-06 | 4.60E-06 | −1.075132 | 0.2930 |
| ROE*PER | 3.61E-05 | 0.000416 | 0.086786 | 0.9316 |
| ROE | −0.014391 | 0.018682 | −0.770320 | 0.4486 |
| EPS^2 | 7.65E-09 | 2.50E-08 | 0.305895 | 0.7623 |
| EPS*PER | −7.15E-06 | 9.18E-06 | −0.779577 | 0.4433 |
| EPS | 4.02E-05 | 0.000179 | 0.224538 | 0.8242 |
| PER^2 | 1.72E-07 | 5.48E07 | 0.311316 | 0.7582 |
| PER | 0.000285 | 0.000418 | 0.680955 | 0.5024 |

Source: data processed (2024)

The analysis of the LQ45 index, as shown in Table 4, utilized the Breusch-Godfrey Serial Correlation LM Test, which revealed that the probability Chi-Square (2) value is 0.4714, which is greater than 0.05. This result leads to the conclusion that the LM test does not indicate any issues with serial correlation. The null hypothesis of no serial correlation up to 2 lags.

**Table 4 Breusch-Godfrey Serial Correlation LM Test**

| F-stat | Obs*R-squared | prob. F(2.37) | prob. Chi-squared(2) |
|---|---|---|---|
| 0.639713 | 1.504049 | 0.5332 | 0.4714 |

Source: data processed (2024)

The cross-section model regression is:

Y = 0.266567 - 0.011495*X1 + 0.002983*X2 - 0.001723*X3. - 3.71E-07*X4 + 0.000431*X5

The interpretation of the constant coefficient value of 0.266567, or 26.656%, indicates that in the absence of the ESG, ROA, ROE, EPS, and PER variables, the stock return variable is expected to increase by 26.656%. The beta coefficient for the ESG Score variable is –0.011495, or –1.1495%, meaning that if the values of the other variables remain constant and the ESG Score variable increases by 1%, the stock return variable will decrease by –1.1495%. Conversely, the beta coefficient for the ROA variable is 0.002983, or 0.2983%, implying that if the other variables are held constant and the ROA variable increases by 1%, the stock return variable will increase by 0.2983%. As well as, EPS, with the coefficient –3.71 or –371% the stock return will decrease by –371% and the coefficient of PER is 0.000431 or 0.0431%, the stock return will increase by 0.0431%.

As shown in Table 5, the following is an explanation of the impact that the independent variables have on the variables that are dependent on them: The t-statistic value for the ESG Score variable is –2.368299, which is lower than the -t table value of –2.01, and the probability is 0.0229, which is lower than or equal to 0.05. Both of these values are less than or equal to the threshold point. Because of this, Hypothesis 2 is accepted, while Hypothesis 1 is rejected, which indicates that the ESG Score has a significant impact on the stock return. When it comes to the ROA variable, the t-statistic value is 0.650336, which is lower than the threshold of 2.01, and the probability is 0.51933, which is higher than 0.05. The conclusion that ROA does not have a significant impact on stock returns is supported by the fact that hypothesis 3 is accepted while hypothesis 4 is rejected. Similar to the previous example, the value of the t-statistic for return on equity (ROE) is –0.640866, which is higher than –2.01. Furthermore, the probability is 0.5254, which is higher than 0.05. This leads to the acceptance of hypothesis 5 and the rejection of hypothesis 6, which indicates that ROE does not significantly influence stock return. The value of t-stats EPS is –0.012030, which is higher than –2.01. Also, the probability is 0.9905 which is higher than 0.05. It means accept hypothesis 7 that EPS has no influence on stock return. Furthermore, the value of t-stats PER is 1.432080 which is lower than t table is 2.01, and the probability is 0.1601 which is higher than 0.05, it means accept hypothesis 9 that PER does not influences on stock return.

**Table 5 T-test Result**

| Variable | Coefficient | Std. Eror | t-stat | prob. |
|---|---|---|---|---|
| C | 0.266567 | 0.145310 | 1.834467 | 0.0742 |
| ESG | –0.011495 | 0.004854 | –2.368299 | 0.0229 |
| ROA | 0.002983 | 0.004587 | 0.650336 | 0.5193 |
| ROE | –0.001723 | 0.002689 | –0.640866 | 0.5254 |
| EPS | –3.71E-07 | 3.09E-05 | –0.012030 | 0.9905 |
| PER | 0.000431 | 0.000301 | 1.432080 | 0.1601 |

Source: data processed (2024)

Table 6 presents empirical evidence on the overall sample, encompassing ESG and stock return variables. The F-test value is 1.415737, which falls below the threshold value of 2.45. Additionally, the significance level is 0.240077, which exceeds the 0.05 threshold. Based on the analysis, it can be concluded that H11 is accepted while H12 is rejected. This suggests that factors such as ESG, ROA, ROE, EPS, and PER do not play a significant

role in determining stock return. In addition, the Adjusted R-squared value is 0.045112, which indicates that ESG, ROA, and ROE together only account for 4.5112% of the variation in stock returns. The remaining 95.4888% of the variability is influenced by other factors.

**Table 6 F-test Result**

| | |
|---|---|
| R-squared | 0.153622 |
| Adjusted R-squared | 0.045112 |
| S.E. of regression | 0.259711 |
| Sum squared resid | 2.630546 |
| Log-likelihood | 0.035866 |
| F-statistic | 1.415737 |
| Prob (F-statistic) | 0.240077 |

Source: data processed (2024)

After conducting thorough analytical research, it is clear that the ESG score has a detrimental impact on LQ45 stock returns in 2023. It is observed that the environmental factor has a notable and unfavorable effect on return on assets, whereas social performance does not seem to be a priority for management in terms of significantly improving financial performance. As a result, investors often overlook social aspects when making investment decisions. In addition, the impact of governance on the company's financial performance is minimal. Therefore, it can be inferred that investors do not consider the governance score to be a significant determinant in their stock investment choices.

The findings of this study reveal that there is no causal relationship between the ESG score and the stocks of companies listed in the LQ45 index, and neither ROA, ROE, EPS nor PER appears to significantly influence stock returns of LQ45 in 2023. This raises questions about whether the ESG implementation practices at these companies are sufficient. This outcome contradicts the theoretical perspective discussed in the literature review, which posits that high ESG ratios are associated with better stock returns in terms of both slope and momentum. Furthermore, this research suggests that ESG risk ratings provided by Sustainalytics, which are based on management and exposure perspectives, do not impact stock returns. This is consistent with the findings of the research conducted by Kevser et al. (2023) which indicates that there is no strong causal association between environmental, social, and governance (ESG) scores and stock market returns in G7 countries. Additionally, the findings of Stearns (2023) indicate that ESG investments did not correlate with stock prices from 2016 to 2020. In 2023, an analysis of this research suggests that there does not appear to be a clear connection between the developments in SRI regulatory policies and the impact of environmental, social, and governance factors on stock returns.

## CONCLUSION

This study investigates whether the screening of ESG, ROA, ROE, EPS, and PER has an effect on stock returns, specifically focusing on the LQ45 index to assess the impact of ESG scores on stock performance using a quantitative approach. The analysis indicates that the ESG Score has a significant impact on the return on stock

ownership. In addition, regression on ESG scores, ROA, ROE, EPS, and PER included 45 blue-chip stocks with strong reputations. According to the results of both the T-test and F-test, these independent variables are shown to negatively influence stock returns. This suggests that, at present, other financial factors are more influential in investment decision-making than ESG practices. There appears to be a misalignment between a company's fundamentals and its stock price movements, as strong financial statements often do not correspond with stock price trends. This discrepancy might be due to investors focusing on additional indicators such as market trends and capital flows. This paper offers several important contributions to the literature on ESG, particularly with respect to Indonesian companies, by highlighting how these firms' active engagement in ESG investments and their specific industry contexts influence stock market performance. The findings suggest that robust ESG policies can be both a significant factor in and a crucial complement to achieving success in the stock market. Effective stakeholder management is likely to enhance confidence, thereby improving financial performance and overall stock market performance. Future research could extend this analysis by examining a longer time frame and including various stock indices and countries to better understand the relationship between ESG practices and stock returns. Additionally, a comparative causality study between stock indices in developing and developed countries could provide stronger evidence on whether ESG ratings truly affect stock market performance as anticipated.

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